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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
10/006,612	11/30/2001	Sammy Haddad	20.2787	1146

7590 12/18/2002

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EXAMINER
DEJESUS, LYDIA M

ART UNIT	PAPER NUMBER
2859	

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/006,612	HADDAD ET AL.	
	Examiner	Art Unit	
	Lydia M. De Jesus	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 February 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a)☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)
2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3)☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 & 4
4)☐ Interview Summary (PTO-413) Paper No(s). _____
5)☐ Notice of Informal Patent Application (PTO-152)
6)☐ Other:

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APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR / PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.

EXAMINER	
ART UNIT	PAPER
	8

DATE MAILED

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on February 13, 2002 have been approved by the examiner. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

2. The papers filed on ***February 13, 2002*** (certificate of mailing dated ***January 22, 2002***) have not been made part of the permanent records of the United States Patent and Trademark Office (Office) for this application (37 CFR 1.52(a)) because of damage from the United States Postal Service irradiation process. The above-identified papers, however, were not so damaged as to preclude the USPTO from making a legible copy of such papers. Therefore, the Office has made a copy of these papers, substituted them for the originals in the file, and stamped that copy:

COPY OF PAPERS
ORIGINALLY FILED

If applicant wants to review the accuracy of the Office's copy of such papers, applicant may either inspect the application (37 CFR 1.14(d)) or may request a copy of the Office's records of such papers (*i.e.*, a copy of the copy made by the Office) from the Office of Public Records for the fee specified in 37 CFR 1.19(b)(4). Please do **not** call the Technology Center's Customer Service Center to inquiry about the completeness or accuracy of Office's copy of the above-identified papers, as the Technology Center's Customer Service Center will **not** be able to provide this service.

If applicant does not consider the Office's copy of such papers to be accurate, applicant must provide a copy of the above-identified papers (except for any U.S. or foreign patent documents submitted with the above-identified papers) with a statement that such copy is a complete and accurate copy of the originally submitted documents. If applicant provides such a copy of the above-identified papers and statement within **THREE MONTHS** of the mail date of this Office action, the Office will add the original mailroom date and use the copy provided by applicant as the permanent Office record of the above-identified papers in place of the copy made by the Office. Otherwise, the Office's copy will be used as the permanent Office record of the above-identified papers (*i.e.*, the Office will use the copy of the above-identified papers made by the Office for examination and all other purposes). This three-month period is not extendable.

Information Disclosure Statement

3. The information disclosure statement filed November 30, 2001 has been placed of record and the references cited therein have been considered.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Coblentz et al. [hereinafter Coblentz].

Coblentz discloses a method of calculating a static formation temperature in a reservoir penetrated by a wellbore, comprising: estimating the static formation temperature [T_e]: calculating a formation fluid temperature at the wellbore [T_f], said calculation based, in part, on the estimated static formation temperature (see lines 5 through 64 of column 5); measuring the temperature of a sample of formation fluid at the wellbore [T] (see lines 13-15 of column 6); comparing the calculated formation fluid temperature at the wellbore with the measured temperature of the formation fluid; and predicting the static formation temperature by altering the estimate of the formation fluid temperature until an error between the calculated formation fluid temperature at the wellbore and the measured formation fluid temperature is minimized (see lines 29-55 of column 2).

Said method further comprises inserting a sink probe [30] engaging the sink probe with the formation at a wellbore wall through perforations [15, 18], and removing fluid from the formation at the wellbore by the sink probe through perforation [15, 18] at a substantially known withdrawal rate due to the use of a fluid flow sonde [36] in the sink probe. Said sink probe [30] is run into the wellbore on a wireline/tubular string [31].

6. Claims 1, 2, 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Curtis.

Curtis discloses a method of calculating a static formation temperature in a reservoir penetrated by a wellbore, comprising: estimating the static formation temperature [TEMP(DG)]: calculating a formation fluid temperature at the wellbore [TEMP (DE)], said calculation based, in part, on the estimated static formation temperature (see lines 57-68 of column 11); measuring the temperature of a sample of formation fluid at the wellbore; comparing the calculated formation fluid temperature at the wellbore with the measured temperature of the formation fluid (see lines 15-22 of column 25); and predicting the static formation temperature by altering the estimate of the formation fluid temperature until an error between the calculated formation fluid temperature at the wellbore and the measured formation fluid temperature is minimized (see lines 11-22 of column 14, lines 46-68 of column 26 and Figure 5).

Said calculation of formation fluid temperature at the wellbore comprises solving radial heat flux equations (see lines 12-17 of column 30).

Said inserting a sink probe [45] within the wellbore; engaging the sink probe with the formation at the wellbore wall; and removing fluid from the formation at the wellbore through perforations [30] by the sink probe at a substantially known rate. Said sink probe is run into the wellbore on a wireline/tubular string [42].

With respect to claims 12-15: Curtis discloses a method of calculating a static formation temperature in a reservoir penetrated by a wellbore [20], comprising: estimating the static formation temperature [TEMP(DG)] in the reservoir and a wellbore fluid temperature [TEMP(DE)]; creating a calculated formation fluid temperature at the wellbore versus time profile for fluid removed form the formation by a sink probe (see lines 7-45 of column 7), based upon, in part on the estimates of the static formation temperature in the reservoir and the wellbore fluid temperature; measuring the temperature of the formation fluid at the wellbore removed from the formation by the sink probe(see lines 31-37 of column 14 and lines 46-68 of column 26), and creating a measured fluid formation temperature at the wellbore versus time profile(see lines 7-60 of column 7); comparing the measured fluid formation temperature at the wellbore versus time profile to the calculated formation fluid temperature at the wellbore versus time profile(see lines 14-18 of column 19); and predicting the static formation temperature by altering the estimates of the static formation fluid temperature in the reservoir and a wellbore fluid temperature until the error between the measured fluid formation temperature at the wellbore versus time profile to the calculated formation fluid temperature at the wellbore versus time profile is minimized (see lines 62-58 of column 26 and Figure 5). Said method further comprises inserting a sink probe [45] within the wellbore; engaging the sink probe with a wellbore wall and removing fluid from the formation at the wellbore through perforations [45] by the sink probe at a substantially known withdrawal rate. Said sink probe is run into the wellbore on a wireline/tubular string [42].

Curtis further discloses that injection of fluid into the wellbore is deactivated during the disclosed measurement method (see lines 42-45 of column 2) and hence it is considered that the

sink probe is run into the wellbore after the wellbore fluid circulation within the wellbore has ceased.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3 through 8 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Curtis in view of Stewart.

Curtis discloses a method as recited, as stated above in paragraph 6, but fails to disclose the following limitations:

- the calculation of formation fluid temperature at the wellbore comprising developing a three-dimensional fluid flow model through the reservoir, as recited in claim3, wherein the three-dimensional fluid flow model through the reservoir is developed using an estimate formation fluid withdrawal rate at the wellbore, as recited in claim 4:

- the calculation of formation fluid temperature at the wellbore comprising solving radial heat flux equations in conjunction with a three-dimensional fluid flow model to develop a calculated fluid formation temperature at the wellbore versus time profile, as recited in claim5, wherein the measured temperature of a sample of formation fluid at the wellbore is used to develop a measured temperature of a sample of formation fluid at the wellbore versus time profile, as recited in claim 6, and wherein the error between the measured temperature of a sample of formation fluid at the wellbore versus time profile and the calculated formation fluid temperature at the wellbore versus time profile is quantified, as recited in claim 7, and further wherein the static formation temperature is predicted by minimizing the error between the measured temperature of a sample of formation fluid at the wellbore versus time profile and the calculated formation fluid temperature at the wellbore versus time profile, as recited in claim 8.

Stewart teaches the use of radial heat flux equations in conjunction with a three-dimensional fluid flow model to develop a calculated fluid formation temperature at a volume of the reservoir versus time profile (see abstract, lines 42-68 of column 4, lines 3-40 of column 5, lines 23-49 of column 6), said model also taking into account the withdrawal rate (see line 43 of column 21 through line 68 of column 24). Stewart further shows that a measurement is preformed of a sample of formation temperature fluid at a given location in said volume in the wellbore and an error between the measured temperature of the sample and the calculated formation fluid temperature at said given location in the volume is quantified (see lines 8-51 of column 19 and lines 1-24 of column 7) and further the error is minimized between the measured temperature of the sample at a given location in the volume and the calculated formation fluid temperature (see lines 20-24 of column 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to expand the method disclosed by Curtis by adding the step of solving radial heat flux equations and developing a three dimensional fluid flow model in order to calculate the formation fluid temperature at the wellbore, as taught by Stewart, in order to improve the accuracy of the estimated formation temperature.

With respect to claims 17-21: It is considered that the steps recited in said claims, as previously addressed above, will be performed during the method resulting from the combination of Curtis and Stewart.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Berger et al. disclose a system for calculating formation temperatures. Ekstrom et al. disclose a system and method for petrophysical formation evaluation in heterogeneous formations. Allaud discloses an apparatus for thermometric well logging. Mufti discloses hydrocarbon remote sensing by thermal gradient measurement. Anderson et al. disclose a method of locating oil and gas horizons using a wellbore heat flow log. Xu et al. discloses formation evaluation from thermal properties. Hsu et al. disclose a method and apparatus for determining the magnitude of components of measurements made from inside a borehole. Cannon discloses a method and apparatus for ascertaining a characteristic of a geological formation. Swanson discloses a process for three-dimensional mathematical modeling of underground geological volumes. Proett et al. disclose a method of formation testing.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lydia M. De Jesús whose telephone number is (703) 306-5982. The examiner can normally be reached on 12:30 to 8:00 p.m., Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F.F. Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Diego F.F. Gutierrez
Supervisory Patent Examiner
Technology Center 2800

LDJ
December 15, 2002